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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,283	08/14/2006	Ryosuke Kainuma	062881	5717

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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03/16/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

Office Action Summary	Application No. 10/589,283	Applicant(s) KAINUMA ET AL.	
	Examiner Kevin M. Bernatz	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 7-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/11/06; 9/11/06; 1/25/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1 - 6) in the paper filed January 6, 2010 is acknowledged. Claims 7 – 34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 – 3 are rejected under 35 U.S.C. 102(a) as being anticipated by Umetsu et al. (App. Phys. Let., 85(11), 09-2004, 2011-2013).

Regarding claim 1, Umetsu et al. disclose a magnetic thin film comprising a substrate (*page 2011, 2nd column: either surface of furnace or of the container holding*

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the sample), and a $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$ thin film formed on the substrate (*Title and Abstract: Co₂CrGa*), said $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$ thin film has a L2_1 or B2 single phase structure (*Abstract*), and wherein M and x meet the claimed limitations ($M = \text{Cr}$ and $x=0$).

Regarding the limitation " $5.5 \leq X \leq 7.5$ ", it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to Applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, since M meets the claimed elemental limitations ($M = \text{Cr}$), the Examiner deems that there is sound basis that M must inherently meet the claimed average valence electron concentration, which is deemed an elemental property. Therefore, in addition to the above disclosed limitations, the presently claimed property of Z meeting the claimed range would have inherently been present because M is

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disclosed as Cr, which is explicitly taught as a material meeting the claimed "M" component.

Regarding the limitation(s) in claims 2 and 3, the Examiner notes that these limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an unobvious difference can be shown to result from the claimed process limitations.

4. Claims 1 – 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Ritcey et al. (J. Appl. Phys., 55(6), 3-1984, 2051-2052).

Regarding claim 1, Ritcey et al. disclose a magnetic thin film comprising a substrate (*Section 2: either surface of furnace or of the container holding the sample*), and a $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$ thin film formed on the substrate (*Title and Abstract: $\text{Co}_2\text{YZ}_{0.98}\text{Sn}_{0.02}$*), said $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$ thin film has a L2_1 or B2 single phase structure (*Section II*), and wherein M and x meet the claimed limitations (*Figure 2 with $M = \text{Cr}$ and $x=0$; but also noting where M can be multiple elements as noted in the claims [$Y = \text{Ti}, \text{V}$ and Cr] and the alloy can include both Ga and Al [$Z = \text{Al}$ and Ga]*).

Regarding the limitation " $5.5 \leq X \leq 7.5$ ", it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of

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either anticipation or obviousness has been established and the burden of proof is shifted to Applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, since M meets the claimed elemental limitations (at least explicit embodiment of $M = Cr$), the Examiner deems that there is sound basis that M must inherently meet the claimed average valence electron concentration, which is deemed an elemental property. Therefore, in addition to the above disclosed limitations, the presently claimed property of Z meeting the claimed range would have inherently been present because M is disclosed as Cr, which is explicitly taught as a material meeting the claimed "M" component.

Regarding the limitation(s) in claims 2 and 3, the Examiner notes that these limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product

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unless an unobvious difference can be shown to result from the claimed process limitations.

5. Claims 1 – 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al. (J. Phys. Soc. Jap., 59(12), 12-1990, 4466-4471).

Regarding claim 1, Kawakami et al. disclose a magnetic thin film comprising a substrate (*Section 2:: either surface of furnace or of the container holding the sample*), and a $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$ thin film formed on the substrate (*Title and Abstract: $\text{Co}_{2T}\text{T}_{1-x}\text{V}_x\text{Ga}$*), and wherein M and x meet the claimed limitations (*M = Cr and x=0: Sections I and II, and Figure 4*).

Regarding the limitation " $5.5 \leq X \leq 7.5$ ", it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to Applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the

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prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, since M meets the claimed elemental limitations (M = Cr), the Examiner deems that there is sound basis that M must inherently meet the claimed average valence electron concentration, which is deemed an elemental property. Therefore, in addition to the above disclosed limitations, the presently claimed property of Z meeting the claimed range would have inherently been present because M is disclosed as Cr, which is explicitly taught as a material meeting the claimed "M" component.

Regarding the limitation in the crystal structure, the Examiner notes that there is sound basis that since these materials are explicitly taught as Heusler Alloys that they would inherently meet the claimed crystal structure limitations, as demonstrated by knowledge in the art that these compounds inherently possess crystal structures meeting the claimed limitations (*see art applied above and cited of note below for support for the Examiner's position on inherency*).

Regarding the limitation(s) in claims 2 and 3, the Examiner notes that these limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an unobvious difference can be shown to result from the claimed process limitations.

Regarding the limitations of claim 4, Kawakami et al. teach forming the Co₂CrGa alloy films in glass containers (*Section 2*).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umetsu et al. as applied above, and further in view of IDS reference Saito et al. (JP 08-250366 A).

Umetsu et al. is relied upon as described above.

Umetsu et al. fail to disclose forming a film of the claimed Heusler alloy on a substrate or buffer layer meeting the claimed limitations.

However, Saito et al. teaches forming a Heusler alloy similar to that disclosed by the primary reference wherein a Cr ground (i.e. “buffer”) film is formed on a MgO substrate (*meeting limitation of "MgO single crystal" substrate*), wherein the laminated film exhibits excellent MR effects (*JPO Abstract*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the device of Umetsu et al. to utilize a substrate and/or buffer film meeting the claimed limitations as taught by Saito et al., since such a laminate can result in products having excellent MR effects.

8. Claims 4 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritcey et al. as applied above, and further in view of IDS reference Saito et al. (JP '366 A).

Ritcey et al. is relied upon as described above.

Ritcey et al. fail to disclose forming a film of the claimed Heusler alloy on a substrate or buffer layer meeting the claimed limitations.

However, Saito et al. teaches forming a Heusler alloy similar to that disclosed by the primary reference wherein a Cr ground (i.e. "buffer") film is formed on a MgO substrate (*meeting limitation of "MgO single crystal" substrate*), wherein the laminated film exhibits excellent MR effects (*JPO Abstract*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the device of Ritcey et al. to utilize a substrate and/or buffer film meeting the claimed limitations as taught by Saito et al., since such a laminate can result in products having excellent MR effects.

9. Claims 4 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. as applied above, and further in view of IDS reference Saito et al. (JP '366 A).

Kawakami et al. is relied upon as described above.

While the Examiner deems that the disclosed glass containers meet the limitation of a "substrate", the Examiner notes that Kawakami et al. fail to explicitly disclose

forming a film of the claimed Heusler alloy on a substrate or buffer layer meeting the claimed limitations.

However, Saito et al. teaches forming a Heusler alloy similar to that disclosed by the primary reference wherein a Cr ground (i.e. "buffer") film is formed on a MgO substrate (*meeting limitation of "MgO single crystal" substrate*), wherein the laminated film exhibits excellent MR effects (*JPO Abstract*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the device of Kawakami et al. to utilize a substrate and/or buffer film meeting the claimed limitations as taught by Saito et al., since such a laminate can result in products having excellent MR effects.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. Several references are noted below since they appear to teach the general concept of Heusler alloys formed of a composition having the formula $\text{Co}_2\text{MGa}_{1-x}\text{Al}_x$. See Carey et al. (U.S. Patent No. 6,977,801 B2) **col. 5, line 37 bridging col. 6, line 30**; Saito (U.S. Patent App. No. 2003/0137785 A1) **Paragraphs 0080-0081**; Ishida et al. (U.S. Patent App. No. 2008/0063557 A1) **entire disclosure, but date after Applicants' effective filing date**; IDS reference Inomata et al. (Jpn. J. Appl. Phys., 42, 2003, L419-422) **entire disclosure**; IDS reference Ambrose et al. (J. Appl. Phys., 87(9), 2000, 5463-5465) **entire disclosure**; and Umetsu et al. (Phys. Rev. B, 72, 2005,

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214412-1 – 214412-7) ***entire disclosure, but date after Applicants' effective filing date.***

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 9:00 AM - 5:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Ruthkosky can be reached on (571) 272-1291. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kevin M Bernatz/
Primary Examiner, Art Unit 1794

March 11, 2010